

REMARKS

The inventive process for preparing thermoplastic polyurethane elastomers (TPU) is characterized by (i) the period of at most 0.5 seconds during which the reactants are premixed and (ii) the respective temperatures of the reactants. Presently significant is (ii) that mandates that before entering the reactor the temperatures of the reactants differ one from the others by less than 20°C (herein "Temperature Difference").

The claims stand rejected under 35 U.S.C. 102(b) said to be anticipated by Kirchmeyer et al (U.S. Patent 5,739,252) or Ulrich et al (U.S. Patent 3,963,679).

The Examiner admits that neither reference disclosed anything relative to Temperature Difference. Kirchmeyer disclosed a range of 50 to 250°C and Ulrich disclosed a range of 90 to 280°C. Clearly, these ranges do not describe the Temperature Difference.

In maintaining the rejection the Examiner assumes that "taken from storage, these species would have had the same temperature" (emphasis added), and assesses the presently required Temperature Difference as a condition that "may be satisfied while the reactants are being stored or removed from storage". Lastly the Examiner asserts without providing evidentiary support that "holding and storing reactants at room temperature prior to processing is a universal, economically desirable practice" (emphasis added).

The prior art - the cited Rausch reference (U.S. patent 3,642,964) and DE 28 23 762 (copy enclosed)- has long opted to using the raw materials in liquid form. The conveyance and controlling of the feeding rate of liquids is simpler and more efficient. Rausch (col. 5 lines 59-68) disclosed that preheating should be to sufficient to maintain the reactants in molten- that is liquid- state. There is, however, nothing in the art of record to suggest that the reactants have to meet the requirement of the presently required Temperature Difference.

Most isocyanates are liquid at room temperature whereas most of the polyols that are used in the production of TPU melt at higher temperatures; polyols that are solids at room temperature are stored at higher temperature and are typically liquid in storage. Therefore since these materials are to be introduced in liquid form, their

introduction into the process at respectively different temperatures has long been conventional. Support for this portrayal of the art is provided in the enclosed EP-A 97899 that disclosed polyol/diol mixture that was used at a temperature of 80°C and isocyanate (MDI) that is used at 50°C. Also supportive is EP-A 708,124 (copy enclosed) that exemplified polyol/diol mixture at 120°C and MDI at 65°C. Also relevant is DE-A 24 18 075 (copy enclosed) that disclosed polyol/butandiol mixture at 90°C and MDI at 60°C. These documents show the state of the art at the point of the invention and clearly contrast the Examiner's unsupported assumption.

Reconsideration of the rejections under section 102(b) and their withdrawal are respectfully requested.

The claims stand rejected under 35 U.S.C. 103(a) said to be unpatentable over Kirchmeyer et al (U.S. Patent 5,739,252) or Ulrich et al (U.S. Patent 3,963,679) each in view of Rausch et al (U.S. Patent 3,642,964).

Applicants believe the argument presented above respecting the rejection under section 102 is applicable here as well: there is nothing in the record to describe or suggest the presently claimed Temperature Difference. The assertion that the reactant streams are at "equivalent temperatures" is in complete conflict with the art as discussed above. Moreover, the assertion that the secondary reference (Rausch) in connection with the temperatures of the reactant feed streams represents common processing techniques is clearly in error. As noted above Rausch (col. 5 lines 59-68) disclosed that preheating should be to sufficient to maintain the reactants in molten-that is liquid-state. The significance of this disclosure in the context of the preparation of TPU has been discussed above.


Based on the finding that TPU having improved homogeneity and melting characteristics results from the inventive process, that entails Temperature Difference cannot reasonably be taken as resulting from having "the reactants (are) being stored or removed from storage" following the conventional practice.

The rejection under section 103 is believed untenable and its reconsideration and retraction are respectfully requested.

Believing the above to completely respond to the outstanding Office Action and their application be in condition for allowance, Applicants respectfully solicit an early indication of allowance.

Respectfully submitted,

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